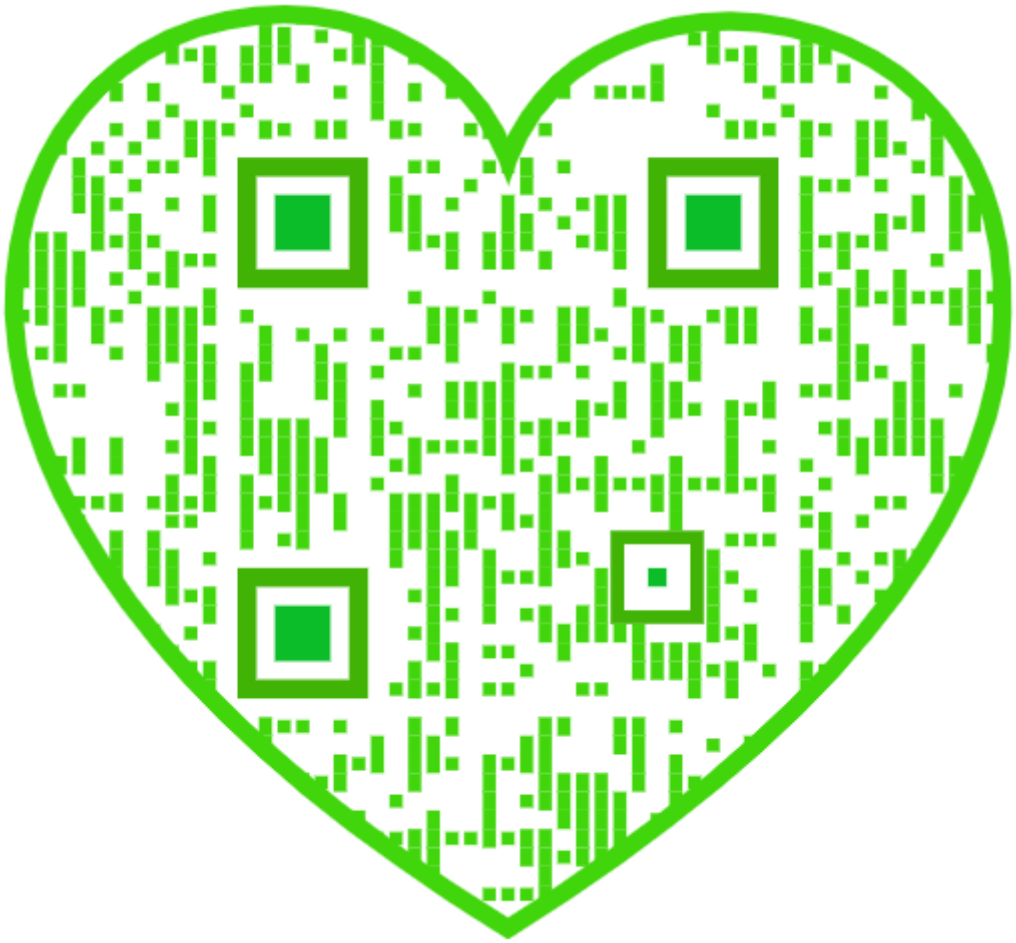

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MILLER'S

"BOSS"

PAINTER'S RECEIPT BOOK,

CONTAINING

Valuable Receipts and Information for the Practical Painter.

By R. C. MILLER,
PRACTICAL PAINTER.

XENIA, OHIO,
Torchlight Printing Company.
1881.

R. C. Miller's

KEY TO RECEIPT BOOK.

AC	Alcohol
AN	Alum
AS	Asphaltum
ASL	Air Slaked Lime
B	Benzine
BT	Barytes
BO	Boiled Oil
BX	Borax
CC	Lime
CO	Copal
CT	Coal Tar
CS	Corn Starch
FO	Fat Oil
FR	Flour
EF	Emery Flour
G	Glue
GC	Gum Camphor
GL	Gum Lac
GM	Cal. Magnesia
IB	Ivory Black
LRG	Litharge
LP	Lamp Black
LR	Red Lead
LW	Lime Water
MR	Marble Dust
NS	Nitrate of Silver
PS	Pumice Stone
PT	Pine Tar
PW	Paris White
R	Caoutchouc
RN	Rosin
RO	Raw Oil
RE	Petroleum
RS	Roschelle Salts
SM	Sweet Milk
RF	Rice Flour
SO	Soda
SF	Sulphate of Lead
SC	Salt
SH	Shellac
ST	Starch
SP	Spanish Whiting
SL	Sugar of Lead
SG	Soluble Glass
SA	Sal Soda
SW	Soft Water
TT	Turpentine
UB	Ultramarine Blue
VGR	Vinegar
VS	Varnish
M	Manganese
WL	White Lead
WZ	White Zinc
WN	Wood Naptha
YO	Yellow Ochre
ZS	Sulphate of Zinc

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TT305.
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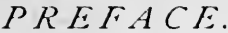
PREFACE.



The following pages, prepared by the author from his own experience, have been condensed and again condensed, until no further "boiling down" could be done. The reader has here a complete compendium of the whole work, excepting the key. He can in a little while become familiar with it, and know exactly where to turn to when in need of advice.

The work was intended to be more elaborate and beautifully bound for the parlor or library, but upon a more thorough investigation the author came to the conclusion that that was not what painters wanted, and has accordingly left out everything except PRACTICAL receipts. Read the receipts carefully, and then try them, and you will find that they will work to your advantage.

XENIA, O., Sept. 30, 1881.

RECEIPTS.

DON'T UNDERRATE YOUR CALLING.

It is a trite saying that "familiarity breeds contempt," but whether it be true or not socially, it certainly is true in regard to any occupation followed for a livelihood, the most lucrative positions being no exception. The merchant grows weary of watching the markets and buying and selling, and probably looks with envious eyes at the manufacturer. In turn the manufacturer would prefer to exchange places with the merchant.

Physicians repeatedly are heard to exclaim "our's is a dog's life, for we must ever be ready, in season and out of season," at a moment's call, to attend the sick.

The blacksmith thinks his calling too laborious and grimy; the wood worker would prefer a trade free from dust, and

that dispensed with the racking labor of drawing the knife; and as for the house painter, he sets his trade down as the sum of all villainies."

Each one wearies with the dull routine of his every day work, although each step in the completion of it requires skill and dexterity that is amazing to those who for the first time witness it.

Painters are specially given to abuse of their trade. They say it is filthy; is full of perplexities that cannot be overcome, and is withal very unhealthy.

Now, the last named charges are true to some extent, but painting in any of its branches will compare favorably with many other trades in point of healthfulness and remuneration, and ranks above them in the estimation of many persons.

Why, almost every human being desires to paint! Even the little creeping babe crows at the sight of bright colors, and children at an early age prize a box of toy water colors above almost anything they

may receive as presents. Just now while it is fashionable to paint on panels and plaques, ladies of wealth and leisure are spending happy hours in the study of color and color effects.

Therefore, be satisfied with your lot, and try to make everything around you beautiful.

RULES OF PAINTING.

The following general rules in painting may be followed with advantage: *a.* Let the ground of your work be properly cleaned, prepared and dry. *b.* See that your colors are equally well ground and duly mixed. *c.* Do not mix much more nor any less than is necessary for the present work. *d.* Keep the paint well mixed while the work is going on. *e.* Have your paint of due thickness, and lay it on equally and evenly. *f.* Do not apply a succeeding coat of paint before the previous one is entirely dry. *g.* Do not use a lighter color over a darker one. *h.* Do not

add dryers to colors long before they are used. *i.* Avoid using any excels of dryer or a mixture of different sorts. *j.* Do not overcharge your brush with paint, nor replenish it before it is sufficiently exhausted. *k.* Begin with tne highest part and proceed downwards with your work.

OILS.

ELASTIC.

10 gallons B, 5 gallons RO, 2 pounds RN, 1 lb. R, 5 lbs. BX, 5 gals. SW, and dissolve the RN and R in 1 gal. of the RO, over a slow fire, the R having previously been cut in small pieces. Allow it to stand until it becomes thoroughly dissolved. Also dissolve the BX in the SW; then mix all together, and it will be ready for use.

The BX and SW can be left out if desired.

Combination Oils for Mixing Paints.

FIRST KIND.—Twelve gals., or one hundred pounds of melted RN, three gallons of crude petroleum oil, fifteen gallons of B.

SECOND KIND.—Twelve gallons, or one

hundred pounds of melted RN, three gallons of crude oil, fifteen gallons of petroleum naptha, ten gallons of RO.

THIRD KIND—For reducing RO or Mixing Paint—one hundred pounds of No. 2 RN, eighteen gallons best B (or enough to make it work with a brush), two gallons of crude petroleum oil, two gallons of re-run paraffine oil, four gallons of RN oil, or fish oil if RN oil cannot be obtained; can mix one gallon of this No. 3 kind with one gallon of RO, and it is better than all linseed for outside work. You can depend on the above.

Composition Oil for Mineral Paint.

Barns, Fences, Roofs, Iron Work, etc.

1 bbl. CT, 1 bbl. PT, 1 bbl. B, 50 lbs. ASL, 10 gals. AS; mix cold. In cold weather it will be necessary to use more B than in warm. SW may be added in place of the mineral, which will give a gray.

FO or CSO can be used to adulterate linseed oil.

Drying Oil.

(Equal to Patent Dryer.)

RO 2 gals., add LR, LRG and umber, of each 4 oz., and SL and ZS 2 oz. each. Boil slow for 4 hours.

Bleaching Oil.

The painter may do this by simply setting a bottle of oil on the window sash, where it will get the sunlight. By artificial methods the oil is subjected to heat, treated with acid, and afterwards washed with steam.

PAINTS.

Substitute for White Lead.

WZ 75 lbs. dry, MR 30 lbs. Mix well together, run it through the mill, or, if you have no mill, a fine strainer. If you want a clear white or tint job use RO and TT, half and half. For plastered walls (inside) you will find that you will have a much better job than you would by using pure lead, as the work stands out better, and finishes like varnished work. If you wish a rough, cheap job use the elastic oil for first and second coats. The MR can be left out, and PW or BT substituted. Do not put any dryer in until you are ready to use the paint.

Substitute for White Lead. — Native barytes, or barium sulphate, is mixed with pulverized stone coal and tar, and exposed to an intense heat, so as to convert it into

barium sulphide. The latter being soluble can be dissolved out, and to the clear solution is added a corresponding quantity of zinc chloride in solution. To the solution of barium chloride is added white vitriol (zinc sulphate), when a precipitate of barium sulphate will be formed, and zinc chloride left in solution, which latter can be filtered and again employed to precipitate the barium sulphide.

The two precipitates obtained as above, namely, zinc sulphide and barium sulphate, are well washed, mixed, dried, heated to a cherry red, then thrown into cold water, and finally ground in water and dried. The white pigment thus obtained covers well, and is well suited to mix with oil, as a substitute for lead, especially where sulphur compounds exist or may be generated.

Adultration for White Lead.

To 50 lbs. white lead add 25 lbs. WZ dry, and 25 lbs. PW or BT. You will find that the paint will still have a good body

and reach as far as 300 lbs. of all pure lead. Mix the WZ and PW (or BT) first and run through the mill or strainer, then put the lead in after breaking it up; use pure RO and TT for inside work half and half.

Patent Ready Mixed Paints.

The ready mixed paints that are now to be seen in the stores, for sale, with flashy labels lauding their good qualities, do not contain an ounce of lead and but very little linseed oil. Lead, as all painters know, would go to the bottom, and there form a hard cake in course of time. The principal pigment used in nine-tenths of the so-called patent paints is WZ and PW with umber—black, red, yellow, &c., to give them the proper shade. The vehicle used is the elastic oil. Any practical painter can make this paint at a cost of about thirty-five cents per gallon.

A Cheap Paint for Rough Work.

50 lbs. Mineral Paint—ocher, brown or

venetian red—which ever is convenient; 50 lbs. PW and 50 lbs. road dust. Then mix with oil and run through the mill, and if ground fine will do for priming or second coating any kind of outside rough work and is very durable.

By adding ½ bushel of ASL, and thinning with half oil and half sweet milk, you will still have a cheaper paint.

How to Make Oil-Cloth.

Dissolve GL over the fire in BO till thoroughly dissolved and the BO is brought to the thickness of a balsam. Spread this upon canvas or any other cloth, so as to drench it and entirely glaze it over. Thus a material will be formed impenetrable by water. The preparation may be used by itself or the different coloring tints added as desired.

A better grade, however, can be made by the following method: First cover the cloth with a paste as follows: Take SW which has been completely cleaned, and

mix to a consistency of paste, add dryers enough to dry it, spread over the cloth by means of a spatula. When the first coat is dry a second is applied. The unevenness occasioned by the coarsness of the cloth or the unequal application, are cut down with PS, and when cut down, wash off well with water, and after it is dried, a varnish composed of GL dissolved in BO. It will dissolve quicker by heating it. Thin with TT and it is ready to apply and the process is complete. Add any color that you wish, or you can grain it if you choose. The above may be used for a table cloth.

Waterproof Cloth—Elastic.

3 lbs. RN, 1 lb. R, 4 gals. BO, ½ gal. W N, dissolve the RN in the BO, and the R after being cut in small pieces in the WN, add Japan enough to dry it. The cloth should previously be soaked in a solution of alum water. If the mixture becomes thick, heat it in a sand bath. It should be applied while warm.

Fire Proof Paint.

70 lbs. WZ, 30 lbs. ASL, 50 lbs WL, 10 lbs. ZS. Mix the WZ and ASL together and grind in the elastic oil, then add 1 gal. 35 deg. SG, then the WL and ZS. Stir well. This will make a whire paint, and if you wish the color changed, add any pigment that you wish to get the shade you desire.

You have enough paint in the above, to go about as far as 500 lbs. of pure white lead, at a cost of about one-third.

Luminous Paint.

Sulphide of calcium (Cantons Phosphorus) mixed with any varnish will produce what is known as luminous paint.

Metalic Enamel Coating.

To make a paint for covering bodies, such as stove pipes, ranges, and other heated surfaces, to produce good work it will be required, first, to coat the object with a

covering of the common graphite or black lead. Only such colors can be used as are unaffected by heat, such as burnt umber, burnt sienna, burnt ocher, green earth, and red or violet oxide of iron, best sort of artificial UB, pure chrome red, chrome green, burnt egg-shell WZ, and the French bronze. All the above can be used, any tint produced by combining them with SO diluted one-half with SW. Bear in mind that it will be necessary to keep stirring them while applying, as they set very quick in the pot, being of a nature similar to Plaster Paris in this respect. The iron should be a little warm so that evaporation may take place at once.

Soluble Glass for Painting.

Heretofore this substance has been but little used for painting purposes, for the reason that when combined with the earth and mineral paints silica is formed, a substance which is almost entirely insoluble. I have been able to prevent this change

from taking place by the following process, and it will give you a paint of stony hardness, of great durability, possessing many good qualities in general. I have used successfully upon mantels. The dry paints should be ground in a size made of starch, (sufficient quantity of the starch being used to prevent its rubbing up.) SP or PW may be used in place of dry WL and give equally as good results.

First coat the work with 35 per cent. SG, thinned down with warm water, let stand one hour or till dry. Then put coat over the work with the water color (previously described) until you have a good body, then rub down well with fine sand-paper, then put on a coat of the SG; then the work is complete. Bear in mind the first and last coat must be the SG. You can put up a first-class job in one-half day. Give this a fair trial and I am confident you will use it continually.

The SG will cost you about 50c. per gallon, then thinned down one-half with water

would make the cost 25c. per gal. for your material. Heat will not blister work coated with this preparation.

Waterproof Oil Rubber Paint.

Dissolve 5 lbs. of India rubber in 1 gallon of BO, by boiling. If this is too thick reduce with BO; if too thin use more rubber. Especially aplicable to cloth, but valuable for any other material.

Green Paint.

I. 5 lbs. YO, dry; 1lb. Orange Chrome, dry; 4 oz. Prussian Blue; grind in oil.

II. 5 lbs. YO, dry; 2 lbs. Canary Chrome; 5 lbs. MR; 6 oz. Prussian Blue; grind in oil.

III. 5 lbs. YO, dry; 4 lbs, Orange Chrome; 3 oz. Antwerp Blue; grind in oil. This makes a very clear color, which you can make either light or dark at pleasure. If you wish to make it lighter add more chrome or YO; if darker add more blue.

This receipt is worth its weight in gold, you will find after using it.

5 lbs. YO	15c
4 lbs. chrome	60c
3 oz. blue	5c
1 gal. linseed oil	75c
Total	$1.55
16 lbs. emerald green	$4.00
Receipt above	1.55
Difference in cost	$2.45

Use No. 1 for first and second coats, or No. 2 for first and second coat and finish with No. 3.

If you have no mill get the colors ready ground in the same proportion as the dry.

How to Mix Water with Paint.

Take SA 3 oz., caustic lime 3 oz., dissolve in one gallon of SW; then stir in gradually ½ gal. RO; let stand for 3 or 4 days. Take one part of this mixture and mix with 2 parts of RO. It is now ready for use.

Adulterations that may be Used in Mixing Paints.

In case that you have a rough job and want to get a good body upon it at a small cost, use for the first coat LW, or the contents of the dissolvent keg, adding a little SP, or anything that you may have in the way of a pigment to fill the pores.

Dust of the road is very good after it has been well cleaned. You can carry it right through the 1st, 2d and 3d coats.

To clean the road dust, first get a large tub, fill it with water, then put the dust into it making it about as thick as second coating. Let it stand for a day or two until it is settled. Drain the water off the top and you will find that the coarse sand is at the bottom and the fine on top, which, after drying, will be ready for use. This has a good body and makes a durable pigment. It can be used to adulterate any dark color.

Dissolvent for Paint Skins.

2 lbs. concentrated lye, 5 lbs. unslacked

lime to 15 gal. water. Put in the old skins and all the dirty buckets, stir them up occasionally. When the skins are dissolved pour off the lye-water and the paint in the bottom will do for priming rough weather-boarding or brick walls. Do not throw the water away as it will do for another time by adding more lye to it.

To Soften Putty and Remove Paint.

To destroy paint on old doors, etc., and to soften putty in window frames, so that the glass may be taken out without breakage or cutting, take equal portions of SO and quick lime, and with water mix them into thick paste. Coat the work with this, allowing it to stand about an hour, when it must be thoroughly washed off with water. This is a speedy method of removing old paint, but it must be used with caution. That is to say, the coating must be removed at the instant that solution has taken place, otherwise the wood will be furred up, and alkali deposited in its fibers to the sub-

sequent detriment of the painting.

Glass Frosting or Crystallizing.

Dissolve RS in gum-arabic water, let stand over night, and after cleaning the glass off well, flow the solution on so that it will not run, lay the glass flat if convenient, and when it commences to set take a pointed stick and dot it in rows to suit the taste; put the dots about 1½ inches apart. If you wish it colored use annalines—red, blue, green and gambuge for yellow or gold color; then flow on a thin coat of Demar Varnish and it is finished.

To Pearl or Crystallize Tin.

Take sulphuric acid, 4 ozs.; soft water, 2 or 3 ozs., according to the strength of the acid; salt, 1 oz. Mix. Heat the tin quite hot over a stove or heater; then with a sponge wet it with the mixture, washing off directly with clean water. Dry the tin; then varnish with Demar Varnish.

Permanent Size for Calsomine, &c.

Dissolve in 20 galls. of boiling water 3 lbs. SA, together with 1 lb. of BX; then add to it, stirring well at the time, 5 lbs. RN having been previously mixed with 2 lbs. B, the whole kept boiling continually till the RN is dissolved. This composition dissolved in the proportion of 1 pound to 30 of water, is to be mixed together with a G solution—made by dissolving 10 lbs. of G in 30 lbs. of SW,—then boil both solutions together for about 10 minutes, then run through the strainer. The above will do for plastered walls that you intend to paint or calsomine.

Permanent Size for Wall Paper or Wood that is to be Varnished.

1 lb. white G, let soak 24 hours in enough SW to cover it, then add 2 gals. boiling SW, 1 pt. WN. Mix well together. This can be relied upon to keep without souring. Common G will do for rough work.

Common starch is a good size for wall paper.

Permanent Paste for Paper Hangers, &c.

Dissolve 1 oz. of AN in 1 qt. warm SW, when cold add FR to make it about the consistency of cream, then add half thimble of RN, half oz. of SL. The above is the preparation for a bucket of paste.

Glue, Waterproof.

Take of gum sandarac and mastic, and white turpentine, of each, 1 oz., alcohol, 1 pint. Dissolve the gums in the alcohol, using heat if necessary, then add the turpentine, and have ready a very thick glue, 1 pint, in which there has been added ½ oz. of isinglass, dissolved. Make the alcoholic solution boiling hot by having it in a pan inside of a kettle, or another pan of water, then slowly add the hot glue, stirring constantly until thoroughly mixed. Strain through a cloth. It is to be applied hot. It dries quickly and becomes very hard,

and surfaces of wood united with it do not separate when immersed in water. This will do to size wood that is to be varnished, but will require thining down when used for that purpose.

Lime for Calcimining.

½ bushel of CC, 1 lb. SC, ½ lb. ZS, 1 gal. SM. For brickwork exposed to damp, the following will be found to work well: ½ pk. of fresh well burnt CC with SW sufficient to make thin paste, run through strainer, add 1 lb. SO, which has been dissolved in boiling water, make a thin paste of 1 lb. of RF, ¼ lb. G, mix with the compound while hot, and add ¼ lb. SA, dissolve in water, stir all together and let stand for one week, or longer. Warm before using.

The following can be more easily prepared, and is very good:

Take ½ bushel of CC, and put it in a kettle, put water enough in to make a thick paste, add 1 gal. RO, boil well for one hour,

then let it stand over night, or the longer it stands the better. When you wish to use it, take out enough for your job, add glue size enough to give it a body and also coloring matter to give it any desired tint, apply with calcimine brush.

Calsomine.

Whiting, 4 lbs.; glue, 2 oz. Stand the glue in water over night, mix the whiting with cold water and heat the glue till dissolved and pour it into the other, hot. Make of proper consistence to apply with a common whitewash brush.

Whitewash that Will Not Rub Off.

To every pail of whitewash prepared in the ordinary way add a pint of flour made into starch or paste. To whitewash for the hen-house add gas tar, 1 gill to each pailful. This will prevent or disperse lice.

Graining.

ROSEWOOD GROUND.—Do not use lead

for priming, use ochre. Second coat, use Venitian red with a little chrome yellow in it and tolerable flat. Use for last coat, American vermillion with a little chrome yellow in it. Work it almost dead flat. In preparing your ground, see that your work is well rubbed and puttied before graining.

Van Dyke brown thinned with lager beer should be used for the over grain. Some use vinegar, but it does not work as well as the beer, and it should be diluted with sugar and water. The growths should be put in with the brown in oil, which, after it is dry thin down and put on a glaze over all. Shade as you go.

BLACK WALNUT GROUND.—Mix as near a dove color as you can as follows: White lead, chrome yellow, Venetian red, burnt umber and very little black. Stipple with burnt umber, 3 parts; raw sienna, 1 part; thin with beer. A common duster will do to slipple with. Work in the growths with burnt umber in oil, with pencil blend them out well, and when dry put on thin

glaze in oil, add a little raw sienna to the umber.

WHITE WALNUT GROUND.—Dark buff or russet color. Stipple with raw umber in beer. Put in growths with raw umber, 3 parts; burnt umber and raw sienna, 1 part in oil, and when dry thin down, glaze and shade.

In graining walnut woods, use the flat over-grainer brush and pencils.

ENGLISH WALNUT GROUND.—Light buff. Stipple with burnt umber in beer. Over-grain with Van Dyke brown in oil. Thin down, glaze and shade, with the same.

OAK GROUND.—Light buff. White lead, chrome yellow and very little Venitian red. Grain with burnt umber, raw sienna and very little burnt sienna in oil and turpentine, half and half; add a little beeswax dissolved in oil. Use the steel comb and also get a piece of rubber about 4 inches long, 2 inches wide and ¼ inch thick, and cut notches in it about ¼ inch apart. Use the rubber for the heavy growths.

After useing the rubber, draw the steel comb diagonally across the work. Use soft canton flannel over the thumb nail to wipe out the lights, hearts, &c.

PINE GROUND.—Light buff. Grain with burnt sienna in oil.

MAPLE GROUND.—Same as oak. Grain with raw umber in beer. Use the points of of your fingers to make the bird eyes, and a flat varnish brush to make the curls, &c., also over-grainer to make the growths.

Stain Graining.

In addition to the art of imitating the graining of woods, marbles, etc., by oil colors, there are methods of bringing out with effect and beauty as well as of preserving the natural graining of woods, etc., and also of imitating, heightening and improving them artificially, which though less practiced is not less ingenious or worthy of attention from the grainer, it being as desirable to heighten and preserve the natural

beauty of wood-work as by artificial painting to imitate them or hide their defects. For bringing out the natural grain of wood-work where it is of sufficient beauty, it is enough to apply successive coats of drying oil or to varnish the naked work till it bears out, which is sufficient for ordinary joiner's work, but for the nicer cabinet work in which the choice ornamental woods are employed, French polishing is necessary, which is performed with a spirit varnish containing lac, applied by rubbers with linseed oil, and is now so common as to have become a distinct business. In other cases graining may be performed on the naked wood with transparent colors in turpentine or water, which when dry may be varnished or French polished, or the same may be done on the ordinary woods previously stained of the colors of the more valuable sorts. A beautiful variety of graining may be executed with strong acids on plain wood brought out by heat, in which way the nitrous acids or aqua fortis applied affords

amber and yellow shades and the sulphuric acid yields shades of a dusky and darker hue, so as together to imitate the various hues of the tortoise shell, etc., after which the work is to be cleaned off and varnished or polished.

STAINS.

To Make Red Sanders Stain.

Fill a bottle of any size a little more than one-quarter full of red sanders, then fill the bottle up with AC. The AC extracts the color from the sanders, and the liquid is called sanders stain, or red sanders stain. The more red sanders you put into the bottle the stronger will be the stain, while it can a at any time be diluted with AC to make lighter shades. The longer it remains in the bottle the more color will be extracted. Always strain it through a piece of thin muslin before throwing the grounds away. Ask for RED SANDERS at any drug store. It is a red wood dust. Ten cents per pound is what I have been paying at all wholesale druggists. Do not ask for less than half a pound, or you may be charged at a high rate.

To Mix Sanders Stain with Asphaltum Varnish.

If you pour red sanders stain in with asphaltum they will not mix of themselves,

but by adding TT sufficient to thin to a proper consistency, the TT will cause both stains to unite. The sanders gives the red shade, and the asphaltum gives the dark—more or less of either will give the required shade according to the strength.

N. B.—The stronger the red sanders stain is made the less of it will be required to give sufficient red, and of course the less AC will be used. It requires very little sanders to get red enough. It is the liquid, not the grounds of the red sanders you mix with the asphaltum. The grounds are, as stated in making sanders stain, thrown away. After mixing these two stains you had better strain it to take the dross from the asphaltum.

On Mixing Again.

Red sanders stain can be mixed with umber ground in oil or turpentine. TT will mix it with all other colors, and it is better and more of a mahogany or rosewood red than all other stains. TT will also mix asphaltum with umber, and make it adhere to

the wood better. In fact, a number of practical experiments can be made with sanders and asphaltum mixed with many other colors, turpentine mixing them either with oils or alcohol colors, and of course with turpentine colors.

Wood Stains.

LIGHT WOODS TO MAHOGANY.—Mix red sanders stain and asphaltum stain (see mixing stains), and when it is the desired color apply with a brush. Do not have the stain too thick. If the wood is not stained sufficiently red to suit your fancy, you may put red sanders stain into the varnish, and every coat of the stained varnish will make the wood more red. N. B.—The stronger the red sanders stain is made the less it takes to color the varnish. And thus you use less AL which is at present prices the most expensive article you have to get. Thin the varnish when you mix stain with it for first coat; by so doing you can spread the color more evenly (in mixing stains and varnishes).

WALNUT TO LIGHT MAHOGANY.—With either a rag or brush rub over the wood a coloring of red sanders stain, and you have a perfect mahogany. And by either oilfinishing or varnishing, the color will be brought out. Red sanders stain dries almost immediately, and can be finished right off.

N. B.—Some walnut wood is light, some dark, consequently make the stain strong or weak to suit the wood. You can at any time give more coloring to the wood if necessary by mixing stain with the varnish, even after varnish has been applied to the wood.

WALNUT TO DARK MAHOGANY.—First go over the work with asphaltum stain then with the sanders, be sure you do not have the asphaltum too thick or the work will be too dark.

ANOTHER MAHOGANY STAIN.—Dragon's blood used the same as red sanders, but it is too expensive and does not stand so well.

AGAIN.—By applying aquafortis diluted with water to dark new woods will make a mahogany, but I don't recoiend it, as aquafortis is expensive and dangerous.

TO DARKEN MAHOGANY.—Use sal soda or lye, but do not have it too strong; dilute it with water. This is to make light mahogany into dark spanish.

Mixing Stains with Varnishes.

Red sanders stain and asphaltum stain can be mixed with the varnish. If the varnish is made from turpentine they will mix readily. If made from oil or alcohol, turpentine will cause the asphaltum to mix.

KNOTY PINE MAHOGANY.—Mix whiting with warm water to consistency of thick whitewash, put in as much Venetian red as will give it a red appearance; now mix in sufficiend dissolved glue as will make the mixture adhere to the wood. By giving the wood two coats of this mixture the flaws, knots, etc.' will be hidden, and when well dry

rub off the loose sizing, then varnish with red sanders stain in the varnish, and you have a very good appearing stain. Brown umber or any colors may be used in the above sizing to suit the fancy for colors, or to darken the mahogany.

WALNUT FOR WHITE WOOD.—A solution of equal parts of permanganate of potash and sulphate of magnesia applied to white wood by means of a brush will produce an excellent brown color resembling walnut. A second coat may be required after the first coat is dry.

WALNUT AGAIN.—Burned umber, burned sienna and boiled linseed oil ground fine. This is not durable, as the oil or varnish is required to protect it from coming off.

WALNUT AGAIN.—One ounce gum asphaltum, three or four ounces of turpentine, one ounce boiled linseed oil, and Venetian red to color red—an old way.

IMITATION BLACK WALNUT.—Popular or White wood treated as follows will assume the appearance of the finest black walnut. The wood must be dry and warm, and then coated once or twice with a strong aqueous solution of extract of walnut peel. When half dried the wood is brushed with a solution compounded of 1 part by weight of bichromate of potassa in 5 parts of boiling water, and after drying thoroughly is rubbed and polished. The stain penetrates to the depth of from one-twelfth to one-sixth of an inch.

FOR ROSEWOOD.—Disssolve two ounces pulverized extract of logwood in one pint of boiling water (better let it boil till dissolved). Apply two coats to the wood while hot, and, to make the rosewood grain, stripe it according to fancy, when dry rub off all the black you can with a rough cloth.

ROSEWOOD AGAIN.—Half pound of red sanders and half pound logwood, boiled in one gallon of water for one hour; strain and add

half and ounce of powdered AM; go over the wood with this while hot, and when dry; form dark streaks with logwood without red sanders, boiled in the same proportions. The dark streaks can be made black by adding one-quarter of an ounce of green copperas to the gallon of a pure logwood stain. You can shade the first mixture by proportioning the red sanders and logwood in first stain.

Beautiful Shades on Light Colored Woods Can be made by holding a flat piece of red hot iron close to the wood so as to scortch it irregularly; also by heating sand as hot as you can and throwing it on the work in uneven thickness. This will bring out very beautiful shades.

CHERRY.—Rub over the light wood the red sanders stain and it will be a good cherry, but do not have the stain too strong or it will be too red.

CHERRY AGAIN.—Boil one ounce onnotto in twelve ounces rain-water; when the color

is well extracted put in a bit of potash the size of two peas, and keep it on the fire a half hour or longer. This raises the grain.

SATIN WOOD—Can be obtained with very light red sanders stains on light woods. It must only be tinged.

Stains for Veneers.

RED.—Brazil wood, fourteen parts; alum four parts; water, eighty-five parts. Boil.

BLUE.—Logwood, seven parts; blue vitriol, one part; water, twenty-five parts. Boil.

GREEN.—Verdigris, one part; vinegar, three parts. Dissolve.

YELLOW.—French berries, seven parts; water, ten parts; alum, one part. Boil.

PURPLE.—Logwood, eleven parts; alum three parts; water, twenty-nine parts. Boil.

Apply the above with a rag, hot (except the green). These stains will raise the grain and must of course be rubbed down before

varnishing. They will not be suitable to go over old varnish, but are good for new veneers.

REMEMBER THIS.—It is impossible to give the quantities in many receipts. Some times you purchase things with more coloring matter, and less would be required. The liquids are sometimes of a higher proof, and in a thousand and one ways you may go wrong if exact quantities were given. Experiment with a very little, and not spoil or waste any large quantity. This refers to shades of stains mostly.

STAINING FLOORS, OLD OR NEW.—To half a pint of asphaltum varnish, add two tablespoonsful of umber (ground in oil); thin this with boiled oil and turpentine (half as much oil as turpentine); then shade with red sanders stain, and by mixing a little turpentine varnish it will wear better. Apply with a brush, not too thick, and mix in a little Japan dryer to dry the varnish.

ORANGE STAIN.—Use vermillion or can

mine mixed with chrome yellow, and be sure and have a good full yellow, or it will look poor or watery.

SALMON STAIN.—Dutch pink and red sanders stain.

FLESH COLOR.—Can be made by using different quantities of Dutch pink and red sanders stain.

PURPLE STAIN.—Lake united with Prussian blue or carmine.

PURPLE.—To a pound of good chip logwood put three quarts of water, boil for an hour, then add four ounces of pearlash and two ounces of indigo pounded.

VARNISHES.

Gloss Vanish.

Take 1 gall. RO. boil for one hour, then add 4 lbs. RN. stir till dissolved, add 1 gall. TT. 1 oz. GC. 1 pt. SH.

Copal Varnish.

5 lbs. pulverized RN dissolved in 1 gall. R. O. 1 pt. Japan, 2 galls, B, 1 gall, TT. 1 qt WN. It will not be necessary to heat the RO to dissolve the RN. An elastic varnish can be had by adding 3 oz of R cut in small pieces and dissolved in RO, by warming. See that it is well dissolved then strain and add to the above.

Common Varnish.

6 lbs pulverized RN, ½lb Beeswax, 1½ gall RO, 1 lb M. Boil for one hour, thin with TT or B until warm.

Damar Varnish.

One of the difficulties to overcome in

making a clear colorless varnish, is the milky opacity usually present when dissolving the gum in the oil of turpentine. This opacity is owing to moisture being present in the gum and not certain parts of the gum remainiug undissolved, as is commonly supposed. The moisture having first been driven off, a clear colorless solution results. Many of the other imperfections of a poor article is owing to the presence of this same moisture. The cracking is largely owing to this, as little bubbles are often formed, hence the uneven surface. They also cause the varnish to spring. To prove this it is only necessary to procure a small quantity of the best Damar the market affords ; add to it one drop of water and it is at once changed to one of the inferior grades. The varnish manufactured by the following process the author found to be colorless, pefectly transparent, dries quickly, a high gloss, and will not crack, peel or become tacky. The main object is to remove the moisture. This can be done by evaporating a solution of the gum, or dry-

ing it first. To do this, a porcelain-lined kettle is necesary, in which place the gum and heat over a slow fire. Great care must be taken to keep the gum from taking fire. The author,s plan has been to have a cover loosely fitting the kettle, its edges or rim covered with cotton having been saturate d to a slight degree with water, and the cove r suspended by a cord over the kettle. In case of fire it can be lowered at once and the flame extinguished immediately. In making the varnish, five parts of the gum should be taken to four parts of the oil of tpn., or 85 oz. of the gum to every 4 gals. of the tpn.

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Mixture of Varnishes.

When different varnishes are mixed, they should always be allowed to stand for several days before useing, in order to give them time to assimilate.

———

Good White Hard Varnish.

One quart of good AL, ten ounces

gum sandarac, two ounces gum mastic, half an ounce of gum anime; dissolve in a clean can or bottle by shaking often till dissolved, and strain.

White Hard Varnish.

Dissolve gum anime in nut oil, boil it gently as the gum is added, giving it as much gum as the oil will take up, and while cooling dilute it with pure turpentine; this will do for the ground, also for the japanning for white. It takea some time to harden, but it is durable.

Body Varnish for Coach Painters.

Eight pounds of fine gum anime, two gallons of clarified oil, three gallons of good turpentine, boil slowly for four hours.

DRYERS.

How to Make and Use Them.

With respect to drying the well-known additions of sugar of lead, litharge and sulphate of zinc, either mechanically ground or in solution for light colors, and Jappanner's gold size or oils boiled upon litharge for lakes, or in some cases verdigris and manganese for dark colors, may be resorted to when the colors or vehicles are not of themselves sufficiently good dryers alone, but it requires attention as an excess of dryers renders oils saponaceous, is inimical to drying and injures the permanent texture of the work. Some colors, however, dry badly from not being sufficiently edulcorated or washed, and many are improved in drying by passing through the fire or by age. Sulphate of zinc as a dryer is less efficient than the acetate of zinc, but is to be preferred with some colors. It is supposed erroneously to set the colors running,

which is positively not the case, though it will not retain those disposed to it because it lacks the property which the acetate possesses of gelatinizing the mixture of oil and varnish. These two dryers should not be employed together as frequently directed, as chemical action takes place and two new substances are formed, one of which is perfectly insoluble, and the other poor in its drying properties. The state of the weather and atmosphere exert a great influence upon the drying of paints, oils, etc. The oxygenating power of the direct rays of the sun renders them peculiarly active in drying oils and colors, and was probably resorted to before dryers were thought of. The atmosphere, too, is imbued with the active matter of light, to which its drying power may be attributed. The ground may also advance or retard drying, because some pigments, united either by mixing or glazing, are either promoted or obstructed by their conjunction. Artificial heat also plays an important part.

The various affinities of pigments occasion each to have its more or less appropriate dryer, and it would be a matter of useful experience if the habits of every pigment in this respect were ascertained. Dryers of less power than the above, such as the acetate of copper, *massicot*, red lead and the oxidis of maganese, to which umber and the cappagh browns owe their drying quality, and others might come into use in particular cases. Many other accidental circumstances may also affect drying. Dryers should be added to pigments only at the time of using them, because they exercise their drying properties while chemically combining with the oils employed, during which the latter becomes thick or fatten and render additional oil and dryer necessary when again used. Acetate of lead dissolved in water, spirit or turpentine may be used as a dryer of oil paints with convenience and advantage in some cases. In the employment of dryers it will be necessary to guard against the following:

(*A.*) Not to add dryers to those pigments which dry well of themselves.

(*B.*) Not employ them in excess, which only retards the drying.

(*C.*) Not to add them till the color is to be used.

(*D.*) Make use of only one kind at a time.

(E.) Impurity of the pigments sometimes retards drying, in which case it should be washed. Another point should be observed, and that is that one coat of paint should be thoroughly dry before another is applied; for if the upper surface of paint dry before the surface beneath, it will shrivel by the expansion and contraction of the under surface as the oil evaporates and dries. Overloading with paint will be attended with the same evil, and if the upper surface be of hard or brittle varnish, cracking of the paint will be the result. Always avoid using old fat paint that is to be varnished over, and always put your dryer into your paint before breaking up or thining.

Drying Property of Linseed Oil.

The activity (drying power) of pure linseed oil is represented—according to M. Chevreul—by 1,985, and oil treated by manganese with an activity of 4,719, yet when they are mixed the sum of the activities (drying powers) will be 30,828. There are substances which increase the drying property of pure linseed oil, and others which seem to retard the drying. Experiments made by M. Chevreul elicited the following facts, namely :

"Linseed oil with one coat applied upon glass was dry after 17 days.

"The same oil, mixed with oxide of Antimony, took 26 days to dry. In this case, the oxide of Antimony was an *anti-dryer*.

"Linseed oil, mixed with oxide of Antimony, and applied upon a cloth painted with white lead, was dry after 14 days.

"The same oil mixed with the Arseniate of protoxide of tin, was not hard after 60 days.

"Oak wood appears to possess the anti-

drying property to a high degree; Poplar to be less anti-drying than oak, and Norway Fir less than Poplar.

"Experiments proved that a first coat of linseed oil on oak was dry, only on the surface after 32 days; and three coats took 159 days to dry.

"Three coats on poplar wood dried in 27 days, and on Norway fir in 23 days.

"One coat of linseed oil given upon surfaces of copper, brass, zinc, iron, porcelain and glass, was dry in every case, after 48 hours."

M. Chevreul believed that a substance may be drying, or anti-drying, under different circumstances. He claims that metallic lead is drying toward pure linseed oil; and white lead, which is well known as possessing drying properties, is anti-drying towards linseed oil applied upon metallic lead.

Japan Dryer—Best Quality.

RO 1 gal., and put into it ¾ lb. SH, ½ lb. LRG, ½ lb LR, 6 oz. SL. Boil in the RO

unil all are dissolved, which will require about 4 hours; remove from the fire, and when very near cool add 1 gal. TT, and stir it up well; then it is done. B can be substituted for TT, if you wish.

Japan Dryer.

RO 1 gal., ¾ lb SH, 2 lbs M, 1 lb ZS. Boil about 4 hours, and when very near cool add 1½ gal. B.

Japan Dryer.

9 gals. of RO, 10 lbs LRG, 10 lbs LR, 7 lbs of Black oxide of M. Boil all together; then add 30 lbs of Kowery Gum and when near cool add 35 gals. TT. This a good dryer and can be depended upon.

Japan Flow, for Tin and Iron.

Take gum sandarach, 1 lb.; balsam of fir, balsam of tolu, and acetate of lead, of each 2 ozs., and linseed oil, ½ pint. Put these into a suitable kettle, over a slow fire at first, then raise to a higher heat until all are melted; now take from the fire, and

when a little cool, stir in spirits of turpentine, 2 qts., and strain through a fine cloth. This is transparent; but by the following modifications any or all the various colors are made from it.

BLACK.—Melt asphaltum, 2 ozs., in spirits of turpentine, ½ pint; then rub up Prussian blue, ½ oz., with a little of it, mix all well, and strain; then add the whole to one pint of the first, above.

BLUE.—Take indigo and Prussian blue, both finely pulverized, of each, ½ oz.; spirits or turpentine, 1 pint. Mix well and strain. Add of this to 1 pint of the first until the color suits.

RED.—Take spirits of turpentine, ½ pint; add cochineal, ½ oz.; let stand 15 hours, and strain. Add of this the first to suit the fancy.

YELLOW.—Take 1 oz. of pulverized root of curcuma and stir of it into 1 pint of the first, until the color suits; let stand a few hours and strain.

GREEN.—Mix equal parts of the blue and

yellow together, then mix with the first until it suits.

ORANGE.—Mix a little of the red with more of the yellow, and then with the first, as heretofore, until suited.

In this simple way you get all the various colors. Apply with a brush.

Varnish for Grate Fronts, &c.

Asphaltum varnish with enough Ivory Black in it so that it will cover well. Do not mix more than you wish to use at one time, for when it stands long it does not do so well.

FILLERS.

Wood Filling.

1 lb CS, ½ pt. BO, ½ pt. Japan, ½ lb PS, 1 gill SH varnish, mix well together; for dark wood add very little burnt umber; thin with B or TT; apply with stiff brush; let it stand till it sets; rub off with Excelsior shavings or rags; get all out of the corners with sticks or putty knife.

I have used this filler for a number of years and can recommend it to the trade. For light woods use more SH varnish and less Japan, unless your Japan is very good.

A Filler for Porous Hard Woods.

Use good BO and CS stirred into a very thick paste, add a little Japan, then reduce

with TT. For dark ash and chestnut, use a little raw sienna; for walnut, burnt umber and a slight amount of Venetian red; for bay wood, burnt sienna. In no case use more color than is required to overcome the white appearance of the starch, unless you wish to stain the wood. This filler is worked with brush and rags in the usual manner.

Let it dry 48 hours, or until it is in condition to rub down with No. o sandpaper, without much gumming up, and if an extra fine finish is desired, fill again with same materials, using less oil but more of Japan and TT. The second coat will not shrink, it being supported by the first coat. When the second coat is hard, the wood is ready for finishing up in any desired style or to any degree of nicety by following up the usual methods. This formula is not intended for rosewood and will not be satisfactory if used therefor.

A Cheap Filler.

If you have a job that you have to put

through in a short time, make a strong size out of common G, and common starch, half and half; dust off the work well and size, and when dry rub down with sandpaper, dust off again, and it is ready for either varnish or paint.

A Good Filler.

2 qts. TT, 1 qt. BO, ½ pt. Japan, 1½ lbs PS pulverized, 3 lbs PW, 1 lb French yellow, 2 lbs plaster paris, 1 lb LRG. This filler is worked with brush, rags, and Excelsior shavings in the usual manner. It must be worked quick, as it sets fast. For dark woods add a small quantity of burnt umber and B sienna.

Putty for Work that is to be Varnished.

For puttying inside work, take one-half SW, one-fourth bees-wax, one-fourth RN; powder the RN very fine, mix it with the SW, then melt the bees-wax in one-half oil and one-half TT, put all together in an old sauce pan and heat gradually, stirring and mix in color; for walnut, match with burnt umber,

and burnt seinna, or venetian red; for light woods, but little if any coloring but the ingredients. After thoroughly heated and mixed, take off and let cool, enough to thicken up for working on a board oiled or covered with whiting, work it into rolls about an inch in diameter; in using have a candle or lamp and round-pointed knife; heat the knife and fill the holes quickly leaving hole round-full; rub off with a bit of sand-paper. After an hour or two, this putty will match the wood perfectly and will never swell nor shrink, and after a little practice, the work can be done just as quick as with ordinary putty. If you are hurried for time and are obliged to use shellac, use white shellac; this leaves the wood clear and don't have that nasty sickly look as when brown shellac is used.

Hard Oil.

In 1 gal. RO put in 4 ozs. of SH and 2 oz. of beeswax. Boil slow for about four hours, then let it settle. I sometimes add ¾

lb. of RN, which makes it as heavy as varnish, and if too heavy thin with TT. Work it the same as you would varnish.

Hard Oil Finish.

There are a number of ways of putting up this kind of work. In the first place fill the wood with the filler, then rub down and putty up, with dust off well, then flow on the hard oil, and when dry cut it down with No. o sand-paper and flow on another coat. When dry cut it down with pulverized PS and sweet oil. If you wish a polished job flow on another coat, making one of filler and one of hard oil. This last coat must get hard, then polish with rotten-stone and BO with woolen rag, and chamois-skin to do the cleaning with.

ANOTHER WAY.—Get a good body with rubbing varnish or common copal; then cut the gloss off with BO and PS. This is the usual way furniture is finished, and is a very cheap way.

Hard Wood Finish and Filling.

Very few persons desire a high gloss on inside work, so there is very little need of varnish for this purpose, still, a high gloss may be used sparingly with a most happy effect,—especially in large rooms, on raised mouldings, &c. The finisher, himself, must always be the judge how the work must be done. In kitchens, pantries, &c, where it has to be cleaned often, especial pains should be taken that it be done well, that it may stand the wear. The oil will have to be used principally. Chambers, &c., where greater care is usually taken in the selection of wood, and the surface less exposed to friction, we can leave it, as far as the color is concerned, the same as it is left by the carpenter. The first thing, of course, is the proper preparation of the surface. The surface may be rough and the grain raised by moisture. If such is the case, go over it carefully with No. 1½ or 2 sand-paper, taking care always to sand-paper in the direction of the grain. Hammer-marks, if found,

should be touched a few times with a moist sponge until they come up even with the other surface.

Oil Polish on Wood.

Fill the grain with SH varnish or wood filling; give two or more coats, sand down and apply two or three coats of oil polish; when thoroughly dry rub with tripoli and water until a polish is secured. Again cut the polish with fine PS and water and polish with sweet oil and rotten-stone. The French method is to use powdered tripoli and BO to bring up the polish.

Slating for Blackboards.

There are quite a number of ways of doing this class of work. I find that the great secret in putting up a good blackboard is to use no oil of any description in any of the coats. If it is a plastered or papered wall you wish to slate first give it a coat of G. size; then rub it down lightly with fine sand-paper; then give it a coat of SH varnish and LP enough to give it a fair body.

If on wood omit the sizing. Then give two coats of either of the following:

1.—2 qts. AC, ½ lb. SH, 12 drachms LP, 20 drachms UB, 4 oz. powdered RS, 6 oz. powdered PS.

2.—1 gal. AC, 1 lb. SH, ½ lb. IB, 5 oz. of EF, 4 oz. of UB.

3.—Take equal parts of PS and LR and grind them in a mixture of TT and best VS; add enough LP to make a dark color, then thin with TT until it is perfectly flat. Apply with a brush and blend over.

4.—1 gal. WN, 1 lb. SH, 4 oz. LP, 4 oz. UB, 1½ lb. SW, 2 oz. PS and powdered emery. The WN is cheaper than AC and does as well.

5.—1 gal. SH varnish, 4 lb. black M, 2 lb. SW.

All the above must be kept well stirred while using them, and when you are through put what you have left in a bottle and cork it up and it will keep for a long time. If at any time the slating is too thick, thin with AC.

Sign Painters' Department.

To Gild on Glass.

SIZE: Take a piece of isinglass about the size of a twenty-five cent piece, and put in a pint of rain water scalding hot, stir until the isinglass is dissolved, then filter through filter paper; then add one tablespoonful of good whisky; let stand 1 day before using. This size will keep a year in a bottle corked up. It will work much better when it has stood two or three weeks.

Good, clear white G will answer if you have no isinglass.

It is sometimes very convenient for the house painter to know how to do a job of glass gilding, and after a little practice it can be done very successfully by following

the directions here given. In the first place good work cannot be done on poor glass. If plate glass cannot be had, then the best French glass should take its place, for to the purity of the glass do we owe the greater part of the briliancy of the work. Having secured the glass, proceed to clean it perfectly with whiting and water, polishing the work-side with tissue paper. Apply the size plentifully to the glass with a clean camels hair spalter, and with a tip throw on leaf somewhat in excess to the space needed for the work, and when this is done let the whole dry, setting it up edgewise. When dry, take refined cotton and rub briskly until the desired lustre is obtained. If most of the leaf has been rubbed away, no matter, the lustre is there. Now lay a second coat in the same manner as the first. When dry go over it again with cotton, lightly, then wash it with sizing repeatedly if a spotless surface is desired. When done it is ready for the design, which must be drawn on paper, pricked and pounced on the gold

in a reverse position, for the same is to show from the opposite side of the glass. Having pounced it, proceed to paint out the whole design with drop black in japan, except such places as may need coloring or to be flatted. Then wash off the surplus gold with water. If the sizing is a little too strong, add a trifle of naphtha to the water when washing. Such places as are to be colored can now be attended to. If flat gold is to form any part, the space left for it is to be laid with ordinary varnish-size and leaf laid in the ordinary manner, which on the opposite side in contrast with that which is burnished will be very dead or flat Do all shading backwards, and when this is dry all is done and if glass, tools, water and room are clean, a fine job may be expected. Silver leaf is worked the same way.

To Gild on Wood, &c.

First get a good body with flat paint, not less than three coats on wood, or two on tin or iron, rubbed down smooth. If it is a

sign you wish to gild, avoid laying off with lead pencil; use soft chalk, then brush off with duster.

For size: use old fat linseed oil, the older the better, mixed with orange chrome yellow, put a very little best Japan in it, thin with TT. Let stand 10 hours, or until it is tackey, then gild.

There are various methods practised by painters in laying gold-leaf. The old method, required the use of a "Tip," Cushion, and gold-knife. The tip is a camels-hair brush or lifter, made from two layers of pasteboard, between which a small quantity of camels-hair is laid flat and the parts glued together. The cushion is simply a piece of chamois skin stretched tightly over one side of an oblong piece of wood six by eight inches, a layer or two of woolen cloth or of cotton is, however, first fastened to the board. The gold-knife has a long narrow and flexible blade with wooden handle and is worthless for any other, than the purpose intended. The gold book is held in the

left hand, and a leaf of the book carefully turned back which exposes a leaf of gold, which is pressed upon the cushion by a dexterous reversal of the hands. Should the leaf wrinkle, a puff of the breath directly from above it, will usually straighten it. Next, with the gold-knife, cut the leaf into the widths required for the work, and by means of the tip, lift so much as the hairs will cover, and apply to the "size" beginning at the outer end of the hair.

The tip must be drawn over the hair or beard occasionally in order to cleanse it from small particles of gold, and to slightly grease it. Ornaments, letters, and scrolls are usually gilt from the book direct. Another mode is to remove the gold-leaf to an empty book the leaves of which have been slightly greased with soap or beeswax, after which the book is cut up into the required widths, and the gold is laid on by exposing and applying it from the cut-pieces.

Gilding Frames.

This class of work requires more appli-

ances than the general run of house painters have. I use gold lacquor and sometimes good coach varnish for size. Bronze may be used with good success by coating over it with clear white SH varnish.

Flock and Smalt.

If it is a gold sign you wish to flock or smalt use slow drying colors and very thick taking care that the color is not fat or greasy, or it will spread and show a rough edge. To flock or smalt other work see that the work is flat where you do not want the flock or smalt to stick.

I would recommend you to make your own smalts. You can do it at a cost of about one cent a pound. Any good, fine sand will do. See that it is clean, put ½ gallon sand in a kettle, heat it hot; keep stirring until it is dry, then put in about 2 oz. of mixed color—the color that you wish, (the color should be mixed in good BO,) keep stirring until all the sand is colored even, then spread it out in the sun to dry,

stir it up occasionally and it is ready for use. If you wish you can add a small quantity of pulverized glass or glass frosting.

To Silver on Glass.

1. Dissolve 12 grains of RS in boiling water; then add, while boiling, 16 grains of NS, having been previously dissolved in one ounce of water; continue the boiling for ten minutes; then add water to make 12 ounces.

2. Dissolve 1 ounce of NS in 10 ounces of water; then add liquor ammonia until the brown precipitate is nearly, but not quite, dissolved; then add 1 ounce alcohol and sufficient water to make 12 ounces.

To silver, take equal parts of Nos. 1 and 2, mix thoroughly, then pour upon the glass in the same manner the photographer applies his solutions, or it may be applied with a brush. It should be applied to the glass while its surface is wet, and should previously be carefully cleaned with soda

and rinsed with clean water. Distilled water should be used for making the solutions. About two drachms of each will silver a plate two inches square. The solution should stand and settle for two or three days before being used; it will keep a long time.

The Method of Lettering.

This analysis is that of the Roman alphabet proper, usually denominated the Ful Roman. It is the most perfectly formed of all the alphabets, making no departure from strictly geometric rules, but adhering in every particular to lines which are either perfect curves or straight lines. Many Roman alphabets—so called—such as the Straight Roman; the New York Roman, etc., are not correctly speaking, the true Roman, from the fact that the curves are not perfectly constructed, varying from a true circle. In this analysis we have adopted a method in very general use by the best authorities on this subject, each letter

being placed upon a frame work of five spaces in height and five spaces in width, thus giving to the student a just proportion of the letters as compared one with another, and also enabling him to increase or diminish the size of the letters simply by enlarging or diminishing the size of the squares; by this method the letters can be extended or contracted by changing the proportion of the width of the squares as compared with their height, and the letters can also be placed at any angle. The working scale or size of square should always be equal to the width of the body or stem of the letter. It will be seen that the letters differ very materially in width, as for instanee, A, C, D, G, K, M, O, Q, R, T, V, Y, Z and the character &, are all full width letters, that is, the height and width correspond; while in B, F, H, L, N, P, S, U and X, the breadth is 4-5 of the height, and in the W, the breadth is greater by 2-5 than the height.

The body of the letter should be 1-5 of its height, except in the curved letters, when

it should be widened a trifle, as otherwise it would have the appearance of being thinner, owing to the fact, that the space between the curved lines always appears less than that between straight lines. The fine lines should be hair lines, and when a scale of one inch is used, that is, in five inch letters, this line should not be over one line, or ½ of an inch in size. The width, or spread of the small curves, (sometimes called grace lines) should be ½ the width of the body of the letter, and the spurs should project as much farther, thus together equaling 1-5 of the height of the letter. In some cases it is necessary to make the curves and spurs at the bottom of the letter a little lon ger than at the top.

The A is a full letter, the outside oblique lines should be drawn from a point, 1-10 of the width of the letter, to the right of the center, upon the upper line; the cross line should be a little below the center of the letter; the grace lines and spurs upon the hair line should be made heavier than

those upon the body.

The B is a four-fifths letter; the cross line should be placed a trifle above the center, thus making the lower curve a little longer than the upper, and giving the letter stability of form; the curves can be made with compasses, by using the points marked with crosses, as centers; the width of the body of the curves should be a trifle more than one-fifth of the height of the letter.

The C is a full letter; the outside line is the circumference of a perfect circle; the inside curve can also be drawn with compasses by changing the center as shown in diagram of this article, illustrating a crescent. The body of the letter should be a little more than one-fifth of the height, and the heaviest part should be below the center; the perpendicular line on the head should be a little within the circle, so that the lower part of the letter will appear broader than the upper part.

The D is a little less than a full letter;

the larger curve is a perfect arc; the inner curve can be made by changing the center and using the same radius as for the outside curve; the body of the curve should be a trifle wider than the upright body.

The E is a four-fifths letter; the lower should be a little longer than the upper; the grace lines of the heads should be long and made with perfect curves; the perpendicular of the lower head should be extended a little longer than the upper; the center piece should project just one-half of the distance to the outside of letter, and be placed a little above the center.

The same rules apply to the F, which is a four-fifths letter, with the exception that the perpendicular of the center-piece, should be a little longer than in the E.

The G is a full letter and the rules for making it are the same as for the C, with the exception that the greatest width of the body should be directly at the center of the letter; the lower right hand part should be fully one-fifth of the width of the letter

and the horizontal line should be drawn a little below the center, and extend from the center, to the same distance outside of the letter as the spurs.

The H is a four-fifths letter; the cross line should be placed above the center, and the lower grace lines should be a trifle longer than the upper.

The I is one-fifth of the height: the lower curves should be a little longer than the upper.

In the proportions of the J, authorities differ, some giving it four-fifths, and others three-fifths of its height; in this analysis I give it as a three-fifths letter; the ball is two fifths of its height, and should be an oval in form.

The K is a full letter; the body is one-fifth of the height: from the upper inside point of the body draw an oblique line to the lower right hand corner of fifth space, then form a point on the body, two-fifths of the height of the letter from the bottom line; draw another oblique line to the up-

per right hand corner of the fourth space on the upper line. This will give a correct outline for the K; a more definite understanding can be had from studying the plate.

The L is a four-fifths letter; the perpendicular line of the arm should be about one-half the height of the letter, the same as in the F.

The M is a full letter; the middle lines should meet the lower line at a point three-fifths of the width from the right hand of the letter; the small curves on the hair line should be heavier than on the other letters.

The N is a four-fifths letter; the grace lines should correspond with those of the M; the left hand one, however, should be a trifle heavier than the right hand.

The O is a full letter, and can be made by following the rules for making the G.

The P is a four-fifths letter; the cross line should be at the center of the height of the letter; the curves can be made with compasses, and the body of the curves

should be a little more than one-fifth of the width of the letter.

The Q is a full letter, and is made the same as the O; the tail should extend to the outside limit of the letter, to the right, and should be at least one-fifth of the height of the letter, below the line; and it will be found well not to vary much from the line of beauty in its form.

The R is made the same as B or P, with the exception that the tail is extended, making it a full letter; the shape of the tail varies with different authorities, either being brought down to a horizontal base and finished with a spur, or curved at the end; in either case the general outline should be the line of beauty.

The S is the most beautiful and the most difficult letter of the alphabet to form correctly; it is a four-fifths letter, and it is formed by two lines of beauty; the upper half should be a little smaller than the lower half. A convenient manner of drafting this letter is as follows: take as centers, points

three-tenths of the height of the letter, from the left hand upper corner and right hand lower corner, describe two circles, and connect arcs. This is not absolutely correct, yet it will serve as a guide to untrained hands, and from it can be formed a perfect letter by changing the curves a little.

The T is a full letter; the upright lines should be two-fifths of the height of the letter, and the grace lines should correspond with those of the E and F.

The U is a four-fifths letter; the hair line on the right, with the grace lines, correspond with those in the N; the curves at the bottom is made with a radius of two-fifths of the height of the letter.

The V is a full letter; the hair line, with the grace line, is formed similar to those in the U; the point where the oblique lines meet on the lower line, should be equally distant from the outside limits of the width of the letter.

The W occupies more space than any other letter, being a seven-fifths letter; th

points on the lower line for the meeting of the oblique lines, should be two-fifths of the height of the letter, from each side, and the body of the second V should occupy the middle space of the upper line, of the whole width of the letter. This can best be understood by studying the plate.

The X is a four-fifths letter, formed simply by an oblique cross; care should be taken, however, to have the upper half a little smaller than the lower half.

The Y is a full letter; the upright part of the body should be just one half the height of the letter, but the point where the hair line connects with the body, should be a little above the center of the letter.

The Z is a full letter; the lower arm should occupy the whole width of the letter, but the upper arm should be about one line shorter; the perpendicular lines from the arms should be about two-fifths of the height of the letter, the right hand one being a trifle longer.

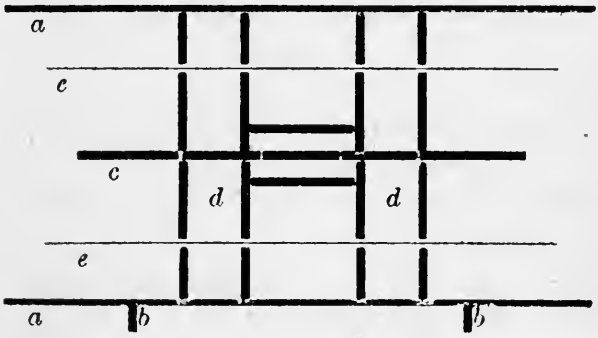
The character & occupies a full space.

In the form of this character, authorities differ very materially. It is an abreviation of the Latin word *Et*, meaning and, and originally was a perfect representation of the letters E and T, but time has changed its form so that its original signification can scarcely be distinguished. The form given here is the most popular as well as the most graceful; and coming the nearest to the original, it can be made as follows: with a radius equal to about three-tenths of the height of the character, describe an arc of three-quarters of a circumference, from the left hand termination of the arc, with a loop form a curve ending in an oval, this forms the E; from the other extremity of the arc draw a line of beauty to the upper line of the space, this forms the cross of the T and completes the character; the body of the curve should be one-fifth of the height of the letter.

The finished block, either round or square, will be given the same space as the Roman.

The unfinished block will all occupy the same space, except the **M**, **W** and **H**, which will require one-fifth more space, the **I** one-half the space. The rule for the formation of all letters is as follows:

DIAGRAM.



a a—Top and bottom lines.

b b—The space the letter occupies.

c—Center line.

d d—Body lines.

e e—Used only for block letters.

In laying off work avoid using the lead-pencil. I would recommend the use of soft chalk, which can be rubbed off easily when finished.

A good way to space a sign that is to be painted on a brick wall is to follow a mortar joint for top and bottom lines: Count the number of bricks running through, and divide by the number of letters and spaces. For example you wish to paint the word *Grocery;* you have here seven letters; give one-half of a space at each end, which would make eight letters and spaces, and the sign is 20 bricks long. The size of the space for each letter would be 2½ bricks, and 1¼ brick at each end. The same rule can be observed on board work by measuring the length of the line, and dividing into feet and inches.

Carriage Painting Department.

The main object to be attained is to get a good foundation to work upon. In working rough stuff carriage painters get too much oil in it, and it does not dry; and when they go to rub it down it rolls up.

Mixing Rough Stuff.

The methods of mixing rough stuff are as various, almost, as the faces of the painters who are required to mix it. The chief requisite is to select certain coarse gritty pigments, such as yellow ochre, French umber or English filling. Whatever paint is selected, it is of vital importance that the paint should be ground exceedingly fine. The liquids required are confined to japan, oil, turpentine and var-

nish; and they must be selected and proportioned according to the time allowed for the rough stuff to harden. Japan hastens, and oil retards the drying. The following recipes have been tested and are known to be good:

1. English filling, 5 lbs.; keg lead, 1 lb.; mixed into a stiff paste with equal parts of either gold size or best brown japan, and three-day rubbing varnish; add a gill of raw oil.

2. Yellow ochre or French umber, 5 lbs.; keg lead, 1½ lbs.; mix stiff in japan, and add a gill of raw oil, and a half pint of the bottoms of wearing varnish.

3. Burnt umber 3 parts, silica 2 parts, yellow ochre 1 part; mix stiff in either brown japan or gold size, and bottoms of wearing body varnish.

The above recipes produce tough, durable coatings, but for lightning dryers omit the oil and oil lead.

The carriage painter will save labor by using clean color varnish and brushes;

always strain your color before using; never mix more than is sufficient for immediate use; never draw from the can more varnish than is necessary, and if you should have any left do not put it back in the can without straining.

The methods of doing work of this class are various. I will endeavor to explain my method. First clean off the work; get it free from grease and dust; rub down all rough places; then give it a good coat of rough stuff; let it get dry. Then plaster it well with putty, which is made as follows: If it is an old job, or new, and you have but little time, use SW mixed into a stiff paste with rubbing varnish, with a little good japan; (use no oil). When dry cut it down with sand-paper; then flow on two good coats of flat color, the last coat with a little rubbing varnish in it; then cut it down with PS: then coat with rubbing varnish, with very little color in it; then cut all down until it is level, when it is ready for striping; then flow on the finishing varnish.

MISCELLANEOUS.

The house painter can make time by knowing how to take advantage of work; or, in other words, how to slight work. Window sash sometimes takes more time than all the balance of the outside work, and in priming, if you take them one by one, it requires considerable labor. A better way is to get two glass boxes and lay the sash on them flat, with the muntins down, one on top of the other evenly; put as many on the boxes as you can reach down, and it will be the same as painting the inside of a box; use a 4-inch flat brush. I sometimes give sash two coats the same day before glazing, which will also save

time, and the work does as well. One good coat will do for the tracing. In painting old sash run around the stiles, letting the tracing go for the first coat; then trace the second coat.

Brackets and scroll work should always be primed before they are put up; and you will make time by giving them two coats, using the same color that the work will be finished in; then in the finishing coat you can leave edges.

BLINDS.—If they are pivot or revolving slat lay the blind on the tressle, with the bar down; then paint the top side of the slat; then turn the slat over and paint the other side; then paint the stiles and the edge next to you; then turn the blind over, and you will find both sides of the slat painted. Paint the bar; then the edge of slat; then in next the stile; then the stile; then set it away and wipe up the other side.

Swinging Scaffold.

It is a well-known fact that the swing is a great improvement no the old style way of

doing work, and for the information of the uninitiated I will give a description of how to rig and work them: The two ropes should be ¾ inch in thickness, and 160 feet long each with double pulley-block above and single below. The stirrup should be made of rope; a ladder will do for the stage. If the roof of the house is flat use a scantling to fasten the falls, to let about three inches of the scantling project over the cornice. Some have iron rings in the end of the scantling to hook the fall into; others use rope; either will do. I prefer to use hooks instead of the scantling. I find that for general use they are the best. They are made of ½x2 inch wagon-tire iron, and are shaped thus:

They are large enough to go over a very

large cornice. The top point is round and sets in a block that has a hole sunk about one half inch in. The block is 5x16 inches and 1¼ inches in thickness, and round at the bottom, to work in gutters. I also have another set to work on shingle roofs. They are flat on the bottom and have spurs that stick into the shingles; so that there is no danger of slipping. They can be worked on gables, even if the roof is steep, and to get to the point of the gable, after pulling the scaffold up as far as it will go, set up a small ladder (or pair of steps) on the stage and you can reach it all.

Varnishing.

In the proper manipulation of varnish lies to a considerable degree the secret of its presenting fullness and brilliancy. The same make of varnish applied by two different methods of brushing, will often present so great a difference in beauty as to give the impression that one body was finished with an A No. 1 grade, while the other

will appear to be quite the opposite.

Finishers who flow on heavy coats of varnish, and spread it over a considerable space before they level it up—as a rule—produce the best work, and are the least liable to lay in complaints about seediness, brush marks and runs.

Painters' Colic.

I have known a great many painters who claimed they took liquor as an antidote to that complaint, and I have noticed this fact, that those who took the antidote were the most liable to be attacked by the colic, so I have come to look with suspicion upon attacks of that kind, as I think that in a majority of cases, the liquor is more at fault than the lead, and that is a very poor antidote that don't prevent. I, myself, learned the trade while the lead system was in vogue, and had my share of it, yet I never had an attack of painters' colic in my life, and which I attribute to being temperate in my habits.

A PREVENTATIVE.—If the painter will use pure olive oil occasionally but regularly, at

table, he will find it a preventative of painters' colic. The free use of milk is also beneficial, to those on whom it does not induce constipation. This however, may be corrected by adding salt, say as much as will lie on a dime, to a goblet full of milk.

Gold Varnish.

A permanent gold varnish, says a writer in the *Furniture Gazette*, which does not lose its color by exposure to air and light, may be prepared in the following manner: Two ounces of the best garancine or artificial alizerine are digested in a glass vessel, with six ounces of alcohol of specific gravity 0.833, for twelve hours pressed and filtered. A solution of clear orange-colored shellac in similar alcohol is also prepared, filtered evoporated, until the lac has the consistency of a clear syrup; it is then colored with the tincture of garancine. Objects coated with this have a color which differs from that of gold only by a slight brownish tinge. The color may be more closely assimilated to that of gold, by

the addition of tincture of saffron.

Frosting Glass.

The *Scientific American* of recent date gives the following method of frosting window glass without the use of paint: Clean the glass and moisten it with ordinary hydofluoric acid. As soon as the frosting is satisfactorily completed wash off with water.

I have not tried the above, but think that it will work.

Recipe for Luminous Paint.

Take 100 parts of rosin oil, which is to be boiled in a suitable pan with 30 parts of freshly slacked lime, raising the heat by degrees. This mass is at first lumpy, then becomes tougher and afterward passes into a thin liquid. At 300° Fahr., the entire surface of the liquid becomes luminous in the dark. At 380° Fahr., the bluish-white light is very strong in the dark. Objects dipped in the liquid remain luminous for some time.

Distemper Painting.

The carbonate of lime or whitening em-

ployed as a basis, is less active than the pure lime of fresco. The vehicles of both modes are the same and their practice is often combined in the same work. Water is the common vehicle, and to give adhesion to the tints and colors in distemper painting and make them keep their place they are variously mixed with the size of glue. Too much of the glue disposes the painting to crack and peel from the ground, while with too little it is friable and deficient of strength. In some cases the glue may be abated or altogether dispensed with by employing plaster of Paris sufficiently diluted and worked into colors, by which they will acquire a good surface and keep their place in the dry with the strength of fresco and without being liable to mildew, to which animal glue is disposed, and to which milk and other vehicles recommended in this mode are also subject. Of more difficult introduction in these modes of painting is beeswax, although it has been employed successfully in each of them, and in the encaustic of the ancients who finisned their work therein

by heating the surface of the painting till the wax melted.

Paint Blistering.

In regard to paint blistering, chipping and cracking, many theories are indulged in, but few persons seem the positive as to the cause. But I find it necessary to separate them in order to discuss the subject fairly.

The cause of blistering I am satisfied, from close observation, is owing to the presence of water, either in paint or the material to which it is applied, with the action of the sun upon it; and is not the fault of the painter.

The reason of paint cracking and chipping off, belongs to the painter's inexperience, and may be avoided, I am fully convinced, by preparing the work before painting with a coat of pure good drying linseed oil.

Observation of the course pursued by experts in applying mastic to brick walls, led me to try the experiment of oiling wood with drying oil before painting, and I have since invariably met with success, besides adding

greatly to the durability of the paint.

The best oil that I have ever used for this purpose, is the raw linseed oil, made drying by a liquid oxide, called Siccohast, which is well known in this part of the country; it makes a superior drying oil to that which is boiled, because it is not sticky, even in hot weather, and never cracks.

When I first commenced to use zinc paint, I was much troubled to prevent its cracking, but by close observation I found that it did not retain oil like carbonate of lead, the wood absorbed more of it, and also I discovered that it dried as hard in six weeks, as lead did in six months, thus convincing me that it required different treatment.

The oil spoken of I can obtain, which dries in six hours, and I make use of it for all my work outside and inside; oiling the new wood before painting, and old work upon the outside, (if very dry,) as well as mixing with paint.

Spontaneous Combustion.

Various substances, both mineral and organ-

ic, are liable to spontaneously acquire a temperature which may lead to unexpected combustion. Under favorable conditions the following substances ignite spontaneously.

Finely powdered charcoal, coals containing iron pyrites, lamp-black impregnated with oil containing a large proportion of hydrogen, lucifer-matches, greasy rags, clean rags that have lain undisturbed for a considerable length of time; wood ashes, hay, cotton, flax, hemp, leaves, spent tan, straw, saw-dust, etc.

Lamp-black, oil, waste rags and saw-dust should be carefully guarded by the carriage builder, if he would remove the cause for serious losses by fire. The painter should not insert an oily palette or putty-knife into a paper or box containing dry lamp-black; nor allow waste rags, saw-dust or tan to remain for any great length of time at rest in any hiding place. While the paint shop presents the greatest liability to spontaneous combustion, the trimming and wood shops are not exempt from danger. Scraps of cotton and woolen cloth stored away and forgotten; also moss

and excelsior may suddenly burst into flame. Fine sawdust in conjunction with grease or oil from the wood worker's bench should receive the most watchful care.

Colored Fires.

It often happens that when some celebration, procession, or other public demonstration takes place, there is an unexpected large demand for colored fires, and the ordinary supply of prepared colored fires is quickly exhausted. A few good recipes are therefore desirable and should be within the reach of all druggists that any sudden call may be supplied. The following formulas are recommended as they do not emit any deleterious fumes. For red, take

Powdered nitrate of strontia	8 parts
Powdered chlorate of potash	4 "
Shellac in coarse powder	2 "
Lycopodium	¼ "

For green, use of

Nitrate of Baryta	9 parts
Shellac	3 "

Chlorate of potash ..... 1½ "

For blue, use of

Ammoniacal sulphate of copper . 8 parts
Shellac ....1 "
Cholorate of potash (coarsely powdered)6 "

These mixtures should be in fine powder except when coarse is mentioned. They burn slowly, give a good light, and can be used as well for parlor theatricals.

Contracting.

OUTSIDE WORK.—To get at the number of yards there are of wall or weatherboard I would suggest the following method: Add the number of feet front and rear to the feet in length (both sides). Multiply this by the average height. Divide the product by 9, which will give the number of yards to be painted.

EXAMPLE—

Front ... .30 feet
Rear ....30 "
Side ... . .40 "
Side ... ...40 "

140

Multiply by average height. 25

700
280

9)3500

Square yards 389

In some sections it is not customary to count in windows and doors solid. The painter should have extra for all outside door and windows. Windows will average three yards; doors and casings five yards. If you think you can do the work for twenty cents per yard, the windows would be sixty cents apiece; then mulitply by the number of windows. The door would be $1, which you will also multiply by the number of doors.

INSIDE WORK.—There are times that the painter cannot go all through a house and measure everything in it that is to be painted. I have made bids on work and never seen the house, inside of ten minutes. The method I have is to average all inside

work thus: 1 side of door and frame, 1 side window and frame, 1 base-board, 1 mantel. If they are all measured up the average will be five yards apiece; at 20 cts. per yard would be $1. Count the number of sides and multiply by $1, and you will have the cost of all the work,

Weights and Measures of Paints.

The figures here given are the results of careful experiments, and will prove as nearly right as is possible to make them:

WEIGHTS—

Turpentine, 1 gal. will weigh	...	5	pounds
Varnish " "	....	8	"
Linseed Oil " "	...	7½	"
Japan " "	....	9	"
Pure lead mix'd 1 gal. "	...	20	"

PRIMING WOODWORK—

1 lb. pure lead will prime	...	4	sq. yds.
" ad'lt'rat'd " " "	...	5½	"
" substitute " " "	....	8	"
" ochre " "	....	7	"

PRIMING BRICK WALL—

1¼ lb. lead will prime ..... 1 sq. yd.

The other paints the same in proportion.

On plastered walls you can calculate on the material going 1¾ times as far as on woodwork, and if the wall is hard finish it will go still farther. 5 pounds substitute will finish a ceiling 15x15, giving it three coats; and you will have a much better job than if you use lead.

Conclusion.

I do not mean to say that these methods of preparing and using paints are the best by any means; but they are the recipes collected by me in my varied experience, and only those are given which I am every day using. It has cost me considerable time and money experimenting and paying for recipes, all of which have been herein offered with improvements made by myself.

Yours, R. C. MILLER.